©NIJCRHSS
Publications

Open Access
Print ISSN: 2992-6106
Online ISSN: 2992-5789

NEWPORT INTERNATIONAL JOURNAL OF CURRENT RESEARCH IN HUMANITIES AND SOCIAL SCIENCES (NIJCRHSS)

Volume 4 Issue 3 2024

https://doi.org/10.59298/NIJCRHSS/2024/4.3.99105

Adherence to Ergonomic Principles in Workstation Practices: A cross-sectional Study of Academic and Administrative Staff of Bishop Stuart University

Ogbe Alex, Francis Kazibwe, Otwine Tweheyo Anne and Emelonye Amaka Doris

Kampala International University Uganda

ORCID: https://orcid.org/0009-0000-0477-0246; https://orcid.org/0000-0001-7382-3743; https://orcid.org/0009-0009-7238-1301
EMAIL:xanderaa2017@gmail.com;fkazibwe@nhs.bsu.ac.ug;aotweheyo@nhs.bsu.ac.ug; nwamakadoris@gmail.com

ABSTRACT

A significant number of studies in the past have failed to show the level of adherence to ergonomic principles in workstation practices between the academic and administrative staff members of a higher institution of learning. While contemporary empirical literature dwells on different aspects of occupational Ergonomics, this article is designed to present which of the two categories of staff of Bishop Stuart University adhere better to ergonomic principles in their respective workstation practices. More and more often, these two categories of staff members, though coexist in the same Niche, have their duties sometimes interwoven. The sad implication associated with this is the difficulty to define the employment status of some staff members at some certain point in our study. On this note, a historical background check is done, to subvert the problem. An analytic cross-sectional study was carried out on the two campuses of Bishop Stuart University within Mbarara City. A total of 112 participants participated in this study. Individual study participants were samples using the techniques of convenience and snowball. The tool used was a structured and validated questionnaire. Data collected were analyzed using Excel and SPSS version 25. Study findings revealed that academic staff adhered better than administrative staff to virtually all the principles of ergonomics in their workstation practices. It is presumed that this finding tuned out like that, because of differences like the work and level of education. Also, it was noted that the most widely applied principle was principle 1, which is working in a neutral position, we had n=46 (41.1%) among the academic staff members and n=17 (38.6%) among the administrative staff applying the principle. This study sought to investigate which of the two categories of staff members in BSU adhere better to ergonomic principles in their respective workstation practices. The study also, established that there is a need for workers to inculcate ergonomic principles into their workstation practices. Premised on the result obtained, it thus recommended that future researchers should consider the health implications of failure to adhere to ergonomic principles in workstation practices.

Keywords: Ergonomics, Principles, Academics, Administrative, Staff, Workstation.

INTRODUCTION

Adhering to ergonomics principles in workstation practices not only makes the life of the worker comfortable in the workstation but also reduces physical strains on the worker's biomechanical system. Additionally, it is needed for the maintenance of good health, improvement in work output, and motivation of workers. The importance of adhering to ergonomic principles in workstation practices can ameliorate the development of fatigability, WMSDs, and repetitive/pressure point injuries [1]. Research in the field of ergonomics has failed to zero down on workplace

ergonomics in an academic setting like BSU. However, the magnitude of the problem in this academia is skyrocketing unperceived. Few studies conducted about ergonomic principles are geared towards maximizing workers' well-being and creating a working environment that fits their respective users. In our third-world setting, the story is different, because little or no attention is given to ergonomic principles' application and adherence to workstations. Relatively few employees pay any attention to the safety of their staff. The reason is simply to avoid litigation and compensation costs. Similarly, workers don't know their legal rights, because they have a narrow outlook on the concept of workplace ergonomics [2, 3]. Keeping the workers in the dark helps to enrich the bourgeoisie in such settings common in third-world countries. The major approach for achieving the objective of adherence to ergonomic principles in workstation practices involves creating ergonomic awareness, observing, and doing what is ergonomically sound in the workstation. The work of [4] attests to this view. More so, workers should be encouraged to maintain a high level of compliance with workstation ergonomics principles [5-8]. Under such circumstances will the objective be achieved.

MATERIALS AND METHODS

Study Design and Setting

The study design was a cross-section survey. Both quantitative and qualitative studies were carried out to elucidate information on the level of adherence to ergonomics principles in workstation practices. The study was carried out on the main campus of the University in kakoba including the law faculty and faculty of Nursing and Biomedical Sciences in Ruharo, all in Mbarara city.

Participants

The participants for the study were academic and administrative staff members of the University.

Inclusion Criteria

Academic and administrative staff members, on full-time working status in the University and who gave informed consent.

Exclusion Criteria

Staff members who are on sabbatical, on part-time, and service workers were excluded from the study.

Tool for Data Collection

A structured questionnaire with open and closed-ended questions was used to collect the data. On a general note, the instrument was designed to capture the socio-demographic aspects of the staff, the observance of ergonomics principles in their daily workstation practices, the ergonomic fit of the working environment, and common work-related injuries. A pilot study of the instrument was done before it was put to use. Thus, the information contained in the questionnaire was cross-checked, inspected, and scrutinized to ensure, completeness, consistency, accuracy, relevance, and uniformity of the data to be collected. The type of questions were closed and open-ended questions. The sets of questions were designed to evaluate staff members' opinions about how they adhere to ergonomics principles in their respective workstations. The closed structured questions were in the form of multiple choice, where respondents choose answers that are by the principle of ergonomics they apply [9, 10].

Sample Size and Sampling Technique

In determining the sample size, Krejce and Morgan formula developed in 1970 was used.

*$S= X^2. N x P x (1-P) / d^2. (N-1) + X^2 x P (1-P)$

S=required sample size

X^2= the table of value of Chi-square for 1 degree of freedom at the desired confidence level (3.841)

N=the population size

P=the population proportion (assumed to be 0.50, since this would provide the maximum sample size of any given fixed population)

d = the degree of accuracy expressed as a proportion (0.05)

The sample techniques of convenience and snowball were used to select all 112 participants in this study.

Open Access
©NIJCRHSS
Publications
Print ISSN: 2992-6106
Online ISSN: 2992-5789

Method of Data Collection

The techniques of data collection were convenience and snowball. The exercise began with succinctly explaining to the respondents the goals of the study. Respondents informed consent was sorted and obtained before the questionnaire was administered in person. Participants were given 48 hours to fill out the questionnaire independently. Participants were given a gift of a pen as a token of compensation for their time. On a general note, data collection spans 6 weeks. At the end of the six weeks, the retrieved forms were edited and cross-checked to ensure they were properly filled out. Before embarking on ethical approval from the institutional REC (BSU-REC-2022-3). More so, the permission to collect data from staff members was obtained from the office of the public relations officer.

Open Access
Print ISSN: 2992-6106
Online ISSN: 2992-5789

Table 1: Table of Daily Application of Ergonomics Principles at the Workstations.

Variable	Total				Teaching staff				Non-Teaching staff			
Ergonomics Principles	N=112				n=68				n=44			
	Applied	%	Not Applied	%	Applied	%	Not Applied	%	Applied	%	Not Applied	%
1	46	41.1	66	58.9	29	42.6	39	57.4	17	38.6	27	61.4
2	28	25.0	84	75.0	15	22.1	53	77.9	13	29.5	31	70.5
3	32	28.6	80	71.4	18	26.5	50	62.5	14	31.8	30	68.2
4	33	29.5	79	70.5	23	33.8	45	66.2	10	22.7	34	77.3
5	25	22.3	87	77.7	16	23.5	52	76.5	9	20.5	35	79.5
6	32	28.6	80	71.4	19	27.9	49	72.1	13	29.5	31	70.5
7	24	21.4	88	78.6	14	20.6	50	79.4	10	22.7	34	77.3
8	18	16.1	88	78.6	11	16.2	57	83.8	7	15.9	37	84.1
9	39	34.8	73	65.2	22	32.4	46	67.6	17	38.6	27	61.4
10	38	33.9	74	66.1	22	32.4	46	67.6	16	36.4	28	63.6

Key

1 Working in a Neutral position
2 Reduce the use of excessive force
3 Keeping everything within easy reach
4 Working at the proper height
5 Reduce the use of excessive motion
6 Minimize fatigue and static load
7 Minimize pressure points
8 Provide clearance within work station
9 Move, exercise, and stretch
10 Maintaining a comfortable working environment

Generally, the most applied principle was principle-1, which is working in a neutral position, while the least applied principle was principle-8, which is providing clearance for working materials in the workstations.

Data Analysis

Among academic staff, n=29(42.6%) respondents admitted applying principle-1 in their workstations, while n=39(57.4%) declined. The administrative staff, had n=17(38.6%) respondents admitting applying principle-1 in their workstations, while n=27(61.4%) declined. To principle 2, n=15(42.6%) agreed to apply it in their workstations, while n=53(77.9%) respondents didn't apply it, while among the administrative staff, n=13(29.5%) agreed to apply it in their workstations, while n=31(70.5%) respondents don't apply it. For principle -3, respondents, n=18(26.5%) claimed to be applying it at their workstations, while n=50(62.5%) didn't. Among the administrative staff respondents, n=14(31.8%) claimed to be applying it at their workstations, while n=30(68.2%) didn't. With principle 4, n=23(33.8%), among the academic staff, agreed to be applying it, while n=45(66.2%), respondents reported not applying it. With the administrative staff, n=10(22.7%), agreed to be applying it, while n=34(77.3%), respondents reported not applying it. To principle -5, n=16(23.5%) claimed to be applying it, as opposed to n=52(76.5%) who don't apply it while among the administrative staff, n=9(20.5%) claimed to be applying it, as opposed to n=35(79.5%) who don't apply it. For Principle-6, n=19(27.9%) admitted applying it in their respective workstations, while n=49(72.1%) didn't. Among the administrative staff, n=13(29.5%) admitted applying the principle in their respective workstations, while n=31(70.5%) didn't. With principle -7, n=14(20.6%) reported applying it among the academic staff, while n=54(79.4%), reported not applying it in their respective workstations. Among the administrative staff, n=10(22.7%) reported applying it, while n=34(77.3%), reported not applying it in their respective workstations. With principle-8, n=11(16.2%) claimed they apply it among the academic staff, while n=57(83.8%), claimed they don't apply it. Among the administrative staff, n=7(15.9%) claimed they apply it, while n=37(84.1%), claimed they don't apply it. For principle-9, n=22(32.4%) of the academic staff, claimed they apply it in their workstations, while n=46(67.6%), claimed they don't apply, while among the administrative staff, n=17(38.6%) claimed they apply it in their workstations, while n=27(61.4%), claimed they don't apply it. Principle-10 had n=22(32.4%) respondents who admitted to applying it and n=46(67.6%), who claimed they don't apply it among the academic staff. While among the administrative staff, n=16(36.4%) respondents admitted applying it and n=28(63.6%), don't apply it. Generally, the most applied principle was principle-1, which is working in a neutral position, while the least applied principle was principle-8, which is providing clearance for working materials in the workstations.

DISCUSSION

The major theme of this article is the adherence to ergonomic principles in workstation practices among academic and administrative staff members. With regards to principle 1, which is working in a neutral position, it is noted that both adhere to this principle, but the outcome proved that it was better adhered to among the academic staff than the administrative staff. Similar, finding was noted in the work of [11, 12]. From their study, it was revealed that those workers who work from a non-neutral posture, often develop MSDs higher than those who take a neutral position. The reason perhaps for this difference is due mainly to the nature of the jobs of the academic staff. They are more mobile than their administrative counterpart in most instances. Principle 2, which is reducing the use of excessive force at workstations, enjoyed the favor of few workers on both sides of the spectrum. However, in the respective workstations, it is noted that the percentages of those who do not apply force in their workstation among the academic staff members relatively exceed that of the administrative staff members. The reason for the difference was likely due to workload and psychological pressure to get work done and not be left behind on the side of the academic staff. However, the account of [13] supports this claim sparingly. Within the purview of good office table management, the relevance of principle three cannot be over-emphasized. The findings of our study revealed that more academic staff apply this principle in their workstation practices than the administrative staff. Ideally, it was expected that it should be the reverse trend. Thus, on a general note, good office ergonomics demands keeping everything within reach, so that extra energy is not expended trying to get the material needed at any given time. This was greatly emphasized in the work of [14]. Also, keeping everything within reach usually increases working speed and reduces confusion and emergencies. Working at the proper height in the workstation is principle four. It was gathered from our study, that within the category of academic staff, the percentage of those who apply this ergonomic principle is quite small. The trend among the administrative staff is not different. However, in comparative terms, the result of the academic staff is still better than that of the administrative staff. The result of [15], shows a similar trend. There is a mismatch in the anthropometry of the worker and the chair and desk in the office in the workstations. Presumably, this is due to the superficial ergonomic planning. Reducing the use of excessive motion in the different workstations was principle five. The outcome was very that few academic staff adhered to this principle in their workplace. This is quite clear, given the workload and the rush to meet deadlines, ultimately prompt most academic staff members to increase their motion or better still speed in executing their

duties. The noted trend among the administrative staff was no different. It is alarming to note the number of staff members who don't apply this principle far number those who do. The outcome of this is RMDs (Repetitive motion disorders). This trend was noted also in a similar pattern in the work of [11]. Principle 6 was minimizing fatigue and static load. The finding from our study showed that the number of academic staff that apply this principle in their workstations is relatively small compared to the number of academic staff member's sample. On the other side, the number of administrative staff members who applied was also very small compared to the total number of staff members sampled. Comparing the two groups the academic staff number outweighs the administrative on the balance. This difference can be explained in light of the static workload of reading students' research online, teaching online, and marking scripts of undergraduate students account for the few numbers of academic staff applying this principle. The finding of [16] attests to this within the purview of ergonomics in academic settings. Principle 7 was minimizing pressure points. The number of academic staff who applied this principle in their workstation was small, compared to those who defaulted. Similarly, those who apply it among the administrative staff were also, small compared to those who do not. On comparing the two groups, the outcome of the academic staff was fairer. The pressure points which are also, called local contact stress in ergonomic parlance, come into play after prolonged application of pressure over a small area of the body. Thus, reducing pressure points, ameliorate MSDs. The finding of this study was similar to the finding of [14], where it was emphasized that prolonged static sitting predisposes an office worker to lower back pain, due to much pressure being put on the lumbar region of the body. Providing clearance within the workstation was principle 8. Emphasis was on keeping the workstation ways clear of obstacles in the form of chair disorientation, running cables for tapping power, leg and foot clearance, etc. From our findings, the number of academic staff members, who applied this principle was too small compared to the numbers who failed in applying this principle. The administrative staff outcome was no different. Comparatively, for those who applied it on the two sides of the continuum, it was noted that the academic staff has a higher number compared to the administrative staff. The difference noted, can be attributed to the fact that the academic staff, using a common staff, seldom have to stay idle due to the influx of students and fellow staff. Conversely, the administrative staff can occasionally be working in isolation. Thus, paving the way to giving a nonchalant attitude to keeping the working station void of obstacles. The work of [17], submitted that it is very important to provide clearance within the workstation, especially leg and foot clearance. Apart from that, lack of adequate clearance can lead to accidents and worse still, lack of leg and foot clearance, predisposing a worker to poor venous return, venous stasis, and finally DVT (deep vein thrombosis). The outcome may be fatal if the worker is a pregnant woman. More, exercise and stretch came in as principle 9. The number of academics who put this principle to practice was small, compared to those who don't. On a similar note, those who applied it among the administrative staff members compared to those who didn't were equally small. This points out that most workers on either side of the scale, barely move around frivolously. This can be explained in the context of workload. How be it, on comparing the two categories of staff, the number of academic staff, applying this principle was relatively more than the administrative staff. On a general note, however, it is often recommended to break a while and do some stretching to allow good venous return as well as reduce boredom. The work of [18] concurs with this finding and admonition. The last principle was on maintaining a comfortable working environment. To this end, it was noted that like all other principles, the number of academic staff who adhere to this principle in their workstation practices where more than administrative staff members. Though, compared with the total number of participants it was also small. The side of the administrative staff was not different. What could be responsible for this outcome, was most probably low knowledge of what ergonomically is involved in maintaining a comfortable working environment. Nevertheless, the work of [19] asserted this notion. Thus, it implies that different staff members, define on their terms what maintaining a comfortable working environment entails according to their perceptions and opinions.

CONCLUSION

This work outlined the ergonomic principles relevant to an ideal academic workstation. It further looked into how two categories of staff members adhered to them. Based on the result of this study, it is right to conclude that the academic staff members adhere better to ergonomic principles in their respective workstations than the administrative staff. Also, the result of this study provided baseline information on several ergonomic issues that deserve the attention of the management. Thus, it is recommended that future research should consider the health implications of poorly designed ergonomic workstations. Above all, the findings from this study indirectly revealed the ergonomic working conditions/environment of other tertiary institutions across all third-world countries.

REFERENCES

1. Hoe VC, Urquhart DM, Kelsall HL, Zamri EN, Sim MR. Ergonomic interventions for preventing work-related musculoskeletal disorders of the upper limb and neck among office workers. Cochrane Database

Syst Rev. 2018 Oct 23;10(10): CD008570. doi: 10.1002/14651858.CD008570.pub3. PMID: 30350850; PMCID: PMC6517177.
2. Henriksen, K., & Albolino, S. (2012). *Human Factors and Ergonomics in Health Care and Patient Safety Towards a safer healthcare system. August 2014*. https://doi.org/10.1136/qshc.2010.045849
3. Koirala, Ranjana & Nepal, Ankit. (2022). Literature Review on Ergonomics, Ergonomics Practices, and Employee Performance. Quest Journal of Management and Social Sciences. 4. 273-288. 10.3126/qjmss.v4i2.50322.
4. Ramdass, K., & Pretorius, L. (2006). *The Role of Ergonomics towards Performance Improvement.*
5. Nwokedi, G. I. (2019). *Staff Awareness of Ergonomics Principles Required at the Computer Workstation : Case Study of University of Jos Library. September.*
6. Mustafa, Shaliza & Kamaruddin, Shahrul & Othman, Zalinda. (2009). Ergonomics Awareness and Identifying Frequently Used Ergonomics Programs in Manufacturing Industries Using Quality Function Deployment.
7. Bowers A. R., Anastasio R. J., Sheldon S. S., O'Connor M. G., Hollis A. M., Howe P. D., Horowitz T. D. (2013). Can we improve clinical prediction of at-risk older drivers? *Accident Analysis and Prevention*, 59(1), 537–547.
8. Fencsik D., Klieger S., Horowitz T. (2007). The role of location and motion information in the tracking and recovery of moving objects. *Perception & Psychophysics*, 69 (4), 567-577.
9. Ugwu, Chinyere. N. and Eze Val, H. U. (2023). Qualitative Research. IDOSR JOURNAL OF COMPUTER AND APPLIED SCIENCES 8(1) 20-35. https://www.idosr.org/wp-content/uploads/2023/01/IDOSR-JCAS-8120-35-2023.docx.pdf
10. Ugwu Chinyere Nneoma, Eze Val Hyginus Udoka, Ugwu Jovita Nnenna, Ogenyi Fabian Chukwudi and Ugwu Okechukwu Paul-Chima (2023). Ethical Publication Issues in the Collection and Analysis of Research Data. NEWPORT INTERNATIONAL JOURNAL OF SCIENTIFIC AND EXPERIMENTAL SCIENCES (NIJSES) 3(2): 132-140. https://nijournals.org/wp-content/uploads/2023/07/NIJSES-32-132-140-2023.pdf
11. Akkshhey Agarwaal, Shailesh Kumar Nair, Chada V. K. Kartik, Aditya Pardeshi, & S.S. Sarawade. (2016). Ergonomic Evaluation to improve Work Posture. *International Journal of Engineering Research And*, *V5*(03), 719–727. https://doi.org/10.17577/ijertv5is031136
12. Cheraghi, M., Shahrabi, M., & Moussavi, S. A. (2017). Ergonomic Risk Factors Evaluation of Work-related Musculoskeletal Disorders by PATH and MMH in a Construction Industry. *Iranian Journal of Health, Safety & Environment*, *6*(1), 1175–1189.
13. Digiesi, S., Facchini, F., Mossa, G., & Mummolo, G. (2018). Minimizing and balancing ergonomic risk of workers of an assembly line by job rotation: A MINLP Model. *International Journal of Industrial Engineering and Management*, *9*(3), 129–138. https://doi.org/10.24867/IJIEM-2018-3-129
14. Rodriguez, R. G., Dumit, C., Rosso, R. Del, Peterle, A., Staneloni, A., & Pattini, A. (n.d.). *office work.*
15. Chandwani, A., Chauhan, M. K., & Bhatnagar, A. (2019). *Ergonomics Assessment of Office Desk Workers Working in Corporate Offices. 9*(August), 367–375.
16. Galof, K., & Suc, L. (2021). *Exploring Teachers ' Back Pain Concerning Their Habits , Rules , Leisure Activities , and Physical Activity Breaks at Work*. 1–10. https://doi.org/10.1177/00469580211060256
17. Hedge, A., James, T., & Pavlovic-veselinovic, S. (2011). International Journal of Industrial Ergonomics Ergonomics concerns and the impact of healthcare information technology. *International Journal of Industrial Ergonomics*, *41*(4), 345–351. https://doi.org/10.1016/j.ergon.2011.02.002
18. Robertson, M., Amick, B. C., Derango, K., Rooney, T., Bazzani, L., Harrist, R., & Moore, A. (2009). *The effects of an office ergonomics training and chair intervention on worker knowledge , behavior and musculoskeletal risk. 40*, 124–135. https://doi.org/10.1016/j.apergo.2007.12.009
19. Taiwo, A. M., Olusola, A. M., & Olufunke, O. A. (2021). *Towards an Adequate Framework for Academic Workspace Evaluation : How Academics are affected by Environments for Work. April.* https://doi.org/10.31871/WJIR.10.4.19

CITE AS: Ogbe Alex, Francis Kazibwe, Otwine Tweheyo Anne and Emelonye Amaka Doris (2024). Adherence to Ergonomic Principles in Workstation Practices: A cross-sectional Study of Academic and Administrative Staff of Bishop Stuart University. NEWPORT INTERNATIONAL JOURNAL OF CURRENT RESEARCH IN HUMANITIES AND SOCIAL SCIENCES 4(3):99-105. https://doi.org/10.59298/NIJCRHSS/2024/4.3.99105